

**WHAT IS CLAIMED IS:**

1. An electrode for a lithium secondary battery wherein an alloy thin film containing Sn (tin) and In (indium) is formed on the surface of a current collector having a surface roughness  
5 Ra of not less than 0.1  $\mu$ m.

2. The electrode for a lithium secondary battery according to claim 1, wherein the Sn content in said alloy thin film falls within the range of 10 to 90 % by weight.

3. The electrode for a lithium secondary battery  
10 according to claim 1, wherein the method of forming said alloy thin film is an electrolytic plating method, an electroless plating method, a sputtering method, or a deposition method.

4. The electrode for a lithium secondary battery according to claim 1, wherein said current collector is a copper  
15 foil.

5. The electrode for a lithium secondary battery according to claim 4, wherein said copper foil is an electrolytic copper foil.

6. The electrode for a lithium secondary battery  
20 according to claim 1, wherein a mixed layer constituted by a current collector component and an alloy thin film component is formed in the interface between said current collector and said alloy thin film.

7. The electrode for a lithium secondary battery  
25 according to claim 6, wherein said mixed layer is formed by heat

treatment after the alloy thin film is formed.

8. The electrode for a lithium secondary battery according to claim 1, wherein the surface roughness Ra and an average interval S between local tops of said current collector  
5 satisfy a relationship given by:  $100Ra \geq S$ .

9. A lithium secondary battery comprising a negative electrode constituted by the electrode according to claim 1, a positive electrode, and a nonaqueous electrolyte.

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